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Hiromichi Yamada

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EXAMINER

GEIB, BENJAMIN P

ART UNIT

PAPER NUMBER

2181

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/611,315

Applicant(s)

YAMADA ET AL.

Examiner

BENJAMIN P. GEIB

Art Unit

2181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 0208.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Applicant, via amendment, has overcome the claim objection set forth in the previous Office Action. Consequently, the examiner has withdrawn this objection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Auerbach et al., U.S. Patent No. 6,879,266 (hereinafter Auerbach).
4. Referring to claim 1, Auerbach has taught a micro controller, comprising a CPU [Fig. 2; processor 202], performing processing in accordance with a program,

Said micro controller further comprising:

a memory [Fig. 2; memory 204], storing: grouped compressed codes [Fig. 2; compressed data 210; compressed codes are grouped in element 210], resulting from the conversion of original codes into variable length codes in a plurality of compressed code format types, and each type has a fixed length [variable length compressed codes (column 11, lines 22-23) are stored in memory (column 3, lines 7-8)],

an address conversion information [compressed instructions are mapped using the index table; column 8, lines 31-33], specifying the head address of each group of grouped compressed codes of variable lengths [each index table entry includes a 26-bit address field; column 8, line 61 – column 9, line 3]; and

a compressed code type information in blocks corresponding to the groups of the compressed codes, including compressed code format type data corresponding to the compressed codes, and indicating the compress code format types of the corresponding compressed codes contained in each group *[each index table entry further includes a 6-bit offset field indicating the length of the variable sized compression block; column 8, lines 19-30; column 9, lines 3-9]; and*

a compressed code processing part, specifying, from a code address output by the CPU, an address conversion information and compressed code type information to be referred, and using the specified address conversion information and the compressed code type information to determine the corresponding compressed code address, and reading the corresponding compressed code *[the decompression unit receives an address from the CPU and, using the information from the index table, reads out the corresponding compressed code; column 3, lines 48-67].*

5. Referring to claim 2, Auerbach has taught the micro controller as set forth in claim 1, wherein the memory furthermore stores dictionary information for decompressing compressed codes into the original codes and the compressed code processing part refers the dictionary information to decompress the compressed code, which has been read, into the original code *[column 4, lines 3-15].*

6. Referring to claim 3, Auerbach has taught the micro controller as set forth in claim 1, wherein said compressed code processing part stores information for identifying the area in said memory in which compressed codes are stored, the area in said memory in which the address conversion information are stored, and the area in which the compressed code type information are stored *[column 8, lines 46-60].*

7. Referring to claim 4, Auerbach has taught the micro controller as set forth in claim 3, wherein said memory stores said address conversion information in the order of blocks of original codes, and to store said compressed code type information in the order of the original codes *[Fig. 2; the instructions and data are stored in a corresponding fashion within blocks].*

Art Unit: 2181

8. Referring to claim 7, Auerbach has taught the micro controller as set forth in claim 1, wherein said compressed code processing part reads, from said memory and prior to reading a compressed code, a compressed code set, having a predetermined size and containing the compressed code to be read *[Fig. 3; column 6, lines 1-9; the instructions read from memory and the have been compressed to a known length]*. said micro controller is equipped with areas, respectively storing temporarily the address conversion information, the compressed code type information, and the compressed code set that were used just immediately before *[Fig. 2; information saved in memory]*, to use the address conversion information and the compressed code type information that are stored temporarily in said areas in a case where the code address output by the CPU is contained in the same block as the compressed code that was read just immediately before *[Fig. 2; the information found in memory is first sent to the decompression engine before it goes to the processor and acts like a buffer]*, and to read the compressed code from the compressed code set that is stored temporarily in said area in a case where the compressed code corresponding to the code address output by the CPU is contained in the compressed code set that was read just immediately before *[Fig. 3; decompressed code will be available for the processor]*.

9. Referring to claim 8, Auerbach has taught the micro controller as set forth in claim 1, wherein said compressed code contains the same program as the original code *[column 5, lines 60-64; decompression will yield the original code]*.

10. Referring to claim 9, Auerbach has taught the micro controller as claimed in claim 1, wherein the code address includes a group number identifying the head address of the group and an order number identifying the compressed code format type datum in the block corresponding to the group identified by the group number, and the processing part determines a base address of the block of the compressed code type information in accordance with the group number and a distance from the bases address to the compressed code format type datum identified by the order number using a sum of the fixed code lengths of the compressed code format types represented by the compress code format type data between the base address and the compressed code format type identified by the order number *[the offset field indicates the start of the compressed block when it is added to the original address; column 9, lines 3-10]*.

Art Unit: 2181

11. Referring to claim 10, Auerbach has taught a micro controller, comprising a CPU, performing processing in accordance with a program,

said micro controller further comprising:

a memory [Fig. 2; memory 204], storing: grouped compressed codes [Fig. 2; compressed data 210; compressed codes are grouped in element 210, resulting from the conversion of original codes into variable length codes in a plurality of compressed code format types, and each type has a fixed length [variable length compressed codes (column 11, lines 22-23) are stored in memory (column 3, lines 7-8)]],

an address conversion information [compressed instructions are mapped using the index table; column 8, lines 31-33], specifying the head address of each group of grouped compressed codes of variable lengths [each index table entry includes a 26-bit address field; column 8, line 61 – column 9, line 3]; and

compressed code type information in blocks corresponding to the groups of compressed codes, including compressed code format type data indicating the compressed code format types of the compressed codes [each index table entry further includes a 6-bit offset field indicating the length of the variable sized compression block; column 8, lines 19-30; column 9, lines 3-9]; and

a compressed code processing part, determining, from a code address output by the CPU and via which the code address the CPU specifies one of the original codes and using the address conversion information and the compressed code type information, a compressed code address of a compress code corresponding to the specified original code, and reading the corresponding compressed code [the decompression unit receives an address from the CPU and, using the information from the index table, reads out the corresponding compressed code; column 3, lines 48-67].

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auerbach in view of Henkel et al., U.S. Patent No. 6,6691,305 (hereinafter Henkel).

14. Referring to claim 5, Auerbach has taught the micro controller as set forth in claim 2.

Auerbach has not taught wherein said dictionary information are stored in areas that are divided according to the code lengths of the corresponding compressed codes, and in each area, said dictionary information are stored in the order of the codes of said corresponding compressed codes.

Henkel has taught a dictionary wherein information is stored in areas that are divided according to the code lengths of the corresponding compressed codes [*Henkel; Figs. 11A and 11D; column 28, lines 2-9; column 26, lines 63-67; there are two areas in the dictionary; compressed codes are clearly distinguished by code length and length tags "N.Bo" for Fig. 11A and "100" for Fig. 11D, thus the two areas are distinguished by code length*], and in each area, said dictionary information is stored in the order of the codes of said corresponding compressed codes [*Henkel; column 27, lines 2-9; because the decoding tables are created during the compression of codes, they are stored in the order of the code of the corresponding compressed codes*].

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Auerbach so that said dictionary information are stored in areas that are divided according to the code lengths of the corresponding compressed codes, and in each area, said dictionary information are stored in the order of the codes of said corresponding compressed codes as taught by Henkel.

The motivation for doing so would have been to fill in the details of the dictionary organization scheme left silent by Auerbach with the simple and elegant organization scheme taught by Henkel.

Art Unit: 2181

15. Referring to claim 6, Auerbach and Henkel have taught the micro controller as set forth in claim 5, wherein said compressed code processing part specifies, from the compressed code type information, the area in which the dictionary information to be referred is stored, and, based on the compressed code, specifies the dictionary information to be referred that is contained in the specified area [*Auerbach; Fig. 3; there are areas specified to hold certain types of data in the dictionary*].

Response to Arguments

16. Applicant's arguments filed 12/18/2008 have been fully considered but they are not persuasive.

17. Applicant argues that "Auerbach and Henkel do not disclose or suggest, (1) 'a memory, storing: grouped compressed codes, resulting from conversion of original code into variable length codes in a plurality of compressed code format types, and each type has a fixed length,' and (2) 'a memory storing: ... a compressed code type information in blocks corresponding to the groups of the compressed codes, including compressed code format type data corresponding to the compressed code, and indicating the compress code format types of the corresponding compressed codes contained in each group,' as recited in the amended Claim 1."

18. Regarding the applicant's argument that Auerbach does not teach compressing the codes into compressed codes of variable lengths, the examiner notes that Auerbach explicitly states that "[t]he compressed form of the 32-bit instruction may vary in size from 7 to 38 bits." Column 11, lines 22-23. Therefore, Auerbach has taught compressed codes of variable lengths. Because the compressed codes vary in size, the compressed codes comprise a plurality of format types, depending on the size of the code. Further, because the format type is dependent upon the size, the size is fixed for a given format.

19. Regarding the applicant's argument that Auerbach does not teach the features relating to the claimed "compressed code type information," the examiner notes that it appears the applicant is reading the claim language regarding these features too narrowly. Specifically, the applicant appears to be reading the claim language as requiring that the "compressed code type information" correspond to individual instructions within a block of code. However, the claims do not require such a reading. If the applicant intends for the claims to be read as indicating that the "compressed code type information"

corresponds to individual instructions within a block of code, then the claims should be amended to require such a reading. Auerbach has taught an index table with entries that contain a 26-bit address field and a 6-bit offset field. Column 8, line 61 – column 9, line 9; Fig. 9. The address field indicates the starting address of a two-block compression group and the offset field indicates the starting address of the second compression block within the group. Because the offset field in the index table indicates the starting address of the second block within a two-block group, the offset field indicates the length of both blocks within the group. By indicating the length of a compression block, then offset field indicates the format types (i.e. lengths) of the codes in that block. Therefore, Auerbach has taught "a compressed code type information in blocks corresponding to the groups of the compressed codes, including compressed code format type data corresponding to the compressed codes, and indicating the compressed code format types of the corresponding compressed codes contained in each group" as claimed.

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN P. GEIB whose telephone number is (571)272-8628. The examiner can normally be reached on Mon-Fri 8:30am-5:00pm.

Art Unit: 2181

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on (571) 272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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